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09/678,318

10/03/2000

William P. Stearns

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08/20/2004

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EXAMINER

BROCK II, PAUL E

ART UNIT

PAPER NUMBER

2815

DATE MAILED: 08/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.



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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 20040817

Application Number: 09/678,318  
Filing Date: October 03, 2000  
Appellant(s): STEARNS ET AL.

**MAILED**

AUG 20 2004

**GROUP 2800**

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Jay M. Cantor  
For Appellant

**SUPPLEMENTAL EXAMINER'S ANSWER**

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This is in response to the appeal brief filed April 5, 2002 and the remand to the examiner filed July 29, 2004.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

No amendment after final has been filed.

**(5) *Summary of Invention***

The summary of invention contained in the brief is correct.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 1 – 8, and 21 – 27 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

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**(9) Prior Art of Record**

2001/0014491	Ohsawa	8-2001
5409865	Karnezos	4-1995

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

Claims 1 – 2 and 20 – 21 are rejected under 35 U.S.C. 102(a) as being anticipated by Ohsawa (US 2001/0014491 A1).

Ohsawa discloses in figure 3j a method of laying out traces for connection of bond pads of a semiconductor chip to a ball grid array disposed on a substrate.

With regard to claim 1, Ohsawa discloses in figure 3j providing a substrate having a surface with a plurality of rows and columns of ball pads and having a solder ball secured to each of the ball pads. Ohsawa discloses in figure 3j providing a plurality of pairs of traces on the surface, each trace of each of the pairs of traces extending to a different one of the ball pads and extending to ball pads on a plurality of the rows and columns, each trace of each of the pair of traces being spaced from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing.

With regard to claim 2, it is inherent in the method of Ohsawa that each of the traces of the pair is further maximized for identity in cross-sectional geometry.

With regards to claims 20 and 21, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 – 4 and 22 – 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa.

With regard to claims 3 – 4, Ohsawa does not disclose applying a differential signal pair to at least one of the pair of traces. Applying differential signal pairs is well known in the art. It would have been obvious to one of ordinary skill in the art at the time of the present invention to apply a differential signal pair to at least one of the pair of traces in order to have a lower output voltage from the pair as is well known in the art.

With regards to claims 22 – 23, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

Claims 5 – 8 and 24 – 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ohsawa as applied to claims 1 – 4, respectively, above, and further in view of Karnezos (USPAT 5409865, Karnezos).

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With regard to claims 5 – 8, Ohsawa does not disclose including a step of providing a further surface insulated from the surface with some of the traces being on the further surface. Karnezos teaches in the abstract section a step of providing a further surface insulated from a surface of a substrate, a plurality of traces are disposed on the further surface. It would have been obvious to one of ordinary skill in the art at the time of the present invention to use the insulated further surface of Karnezos in the method of Ohsawa in order to provide a generally flexible dielectric film bearing a pattern of conductive traces as stated by Karnezos in the abstract.

With regards to claims 24 – 27, Ohsawa inherently discloses that the substrate is a printed wiring board substrate.

**(11) Response to Argument**

***This is a Supplemental Examiner's Answer in response to the Remand to the Examiner dated July 29, 2004. For clarity, all arguments from the original Examiner's Answer dated June 18, 2003 are repeated. At the end of this argument section an additional argument is included specifically explaining how figure 3j of Ohsawa reads on the claim limitation "each trace of each of said pair of traces being spaced from the other trace of said pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing." Only the previous rejection is further explained. No new grounds of rejection are made.***

With regard to the appellant's argument that "a reading of the specification of Ohsawa and of that figure [3j] nowhere teaches or even remotely suggests the claimed step [represented in claim 1, part b], regardless of the examiner's allegations to the contrary," (bracketed words

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added for clarity), it should be noted that figure 3j of Ohsawa clearly depicts the claim limitations of claim 1. Appellant has not pointed out specifically how Ohsawa does not read on claimed subject matter. Instead appellant has stated “regardless of the examiner’s allegations to the contrary.” This statement is a clear indication that the appellant has not pointed out specifically how the prior art fails to anticipate the claims. (Please see the new arguments for further clarification). Therefore, the appellant’s arguments are not persuasive, and the rejection is proper.

With regard to the appellant’s argument that “the Examiner states in the reasons for allowance in the parent application that ‘Lee et al. fail to teach each trace of each pair [of] traces being spaced apart from the other trace of the pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing’,” it is not clear how this statement relates to the rejection of the present claims in this application. A different examiner was assigned to the parent case, and Lee et al. is not a reference relied upon for the rejection of any claims in the present application. This argument clearly does not address how the prior art of Ohsawa and Karnezos has been applied to the claims. Therefore, the appellant’s arguments are not persuasive, and the rejection is proper.

With regard to the appellant’s argument that Ohsawa does not teach or suggest “each of the traces of the pair be further maximized for identity in cross-sectional geometry,” it should be noted that Ohsawa clearly anticipates this limitation by inherency due to the fact that it is an intended use limitation. For example, each of the traces of the pair of traces in both the claims and in Ohsawa are intended to be used to maximize their identity in cross-sectional geometry. By simply existing as traces with a geometric cross-section, traces have an intended identity

which fill out and maximize their existing cross-sectional geometry. For example, the traces do not have a smaller cross section than they define. Also, the applicant has not pointed out how the prior art fails to teach this limitation. Therefore, the appellant's arguments are not persuasive, and the rejection is proper.

With regard to the appellant's argument that Ohsawa does not teach or suggest such a combination "requiring that the substrate be a printed wiring board substrate," it should be noted that Ohsawa clearly anticipates this limitation by inherency due to the fact that figure 3j of Ohsawa has printed wires on a substrate that is a board. Further, the rejections of this limitation only relies on Ohsawa, and not on a combination as stated by the appellant. Also, the applicant has not pointed out how the prior art fails to teach this limitation. Therefore, the appellant's arguments are not persuasive, and the rejection is proper.

With regard to the appellant's argument that Ohsawa does not teach or suggest such a combination "requiring the step of applying a differential signal pair to at least one of a pair of the traces," it should be noted that Ohsawa and one of ordinary skill in the art clearly teach this limitation. The appellant has not given any indication that this limitation is not well known in the art. Because the appellant has not indicated otherwise, it can only be assumed that the limitation of requiring the step of applying a differential signal pair to at least one of a pair of the traces is well known in the art, and the combination is proper. Further, this limitation appears to be an intended use recitation. For example, at least one of a pair of the traces are intended to be used by applying a differential signal pair (a differential signal pair is an electrical signal applied to the traces). Also, the applicant has not pointed out how the prior art fails to teach this limitation. Therefore the appellant's arguments are not persuasive, and the rejection is proper.



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With regard to the appellant's argument that Ohsawa, Karnezos or any proper combination of these references does not teach such a combination "requiring the step of providing a further surface insulated from the surface, a plurality of the traces being disposed on the further surface," it should be noted that Ohsawa and Karnezos clearly teach this limitation. The appellant has not pointed out specific reasons why the proposed combination of references does not teach this limitation. Therefore the appellant's arguments are not persuasive, and the rejection is proper.

**Explanation of figure 3j of Ohsawa:**

On the following page, figure 3j of Ohsawa is highlighted to show exactly how "each trace of each of said pair of traces being spaced from the other trace of said pair by up to a ball pitch, being maximized for identity in length and having up to one ball pitch difference in length and being maximized for parallelism and spacing." Specifically, box 1 defines a ball pitch, box 2 describes how each trace of each of the pair of traces are "maximized for parallelism and spacing" in at least this portion of the trace, box 3 show how each trace of each of the pair of traces has "up to one ball pitch difference in length", box 4 points out how each trace of each of the pair of traces are "spaced from the other trace of said pair by up to a ball pitch" and are "maximized for identity in length," and box 5 points out that other pairs of traces have these same features.

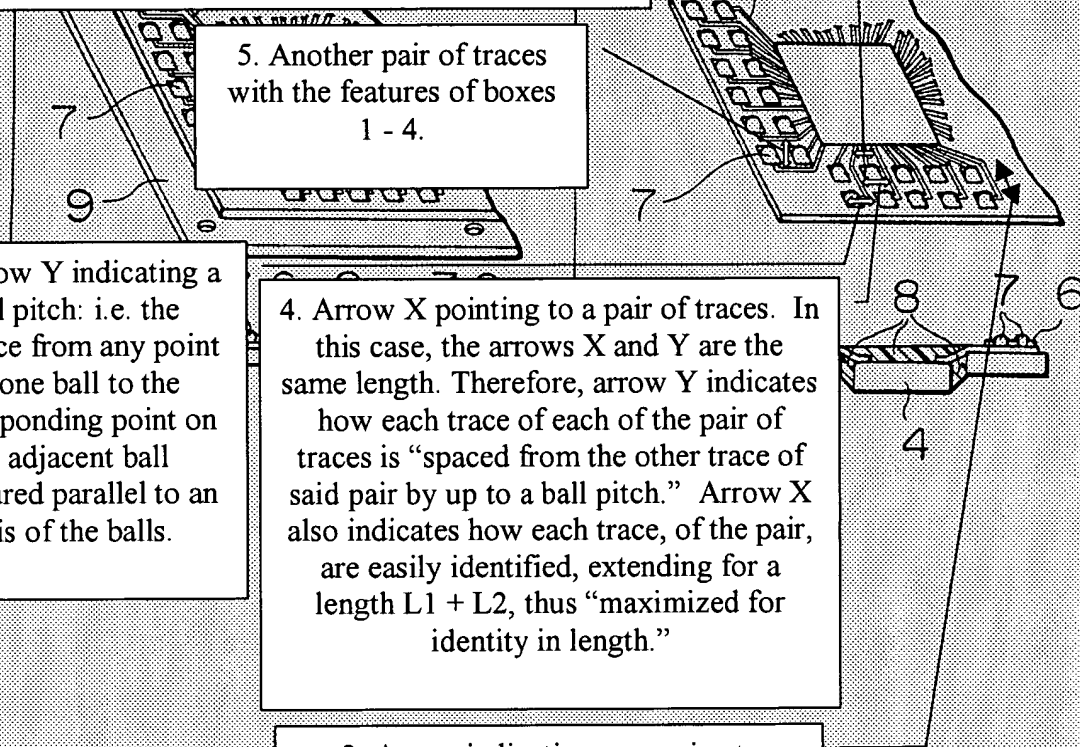
3. This arrow points to a portion of each trace where the length L2 of each trace extends from the die pad to the parallel portion of the trace. The traces are not necessarily parallel to each other in this portion, but they display the "up to one ball pitch difference in length". For example, the trace length of the trace on the left, is up to one ball pitch longer than the trace length of the trace on the right.

5. Another pair of traces with the features of boxes 1 - 4.

1. Arrow Y indicating a ball pitch: i.e. the distance from any point on one ball to the corresponding point on an adjacent ball measured parallel to an axis of the balls.

4. Arrow X pointing to a pair of traces. In this case, the arrows X and Y are the same length. Therefore, arrow Y indicates how each trace of each of the pair of traces is "spaced from the other trace of said pair by up to a ball pitch." Arrow X also indicates how each trace, of the pair, are easily identified, extending for a length  $L1 + L2$ , thus "maximized for identity in length."

2. Arrow indicating approximate direction and length L1 where a bottom portion of the bottom traces are parallel to each other and are the same length L1. Because the traces are parallel to each other, and spaced from each other, they can be considered "maximized for parallelism and spacing" in at least this portion of the trace.



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For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Paul E Brock II  
August 18, 2004

A handwritten signature in black ink, appearing to read "Paul E Brock II", written in a cursive style.

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